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IB No. 263/64

23 June 1964

Copy No. 1

MEMORANDUM FOR: Chief, PO43/B2, NSA

ATTENTION :

FROM : Chief, CIA/PID (NPIC)

SUBJECT : San Men Gorge Dam and Hydroelectric Power Plant

REFERENCES : (1) NSA Requirement No. P056/R1-63
(2) CIA/PID Project No. C 88/63

1. This memorandum is in response to the referenced requirement which asks for information concerning construction and equipment installation at the San Men Gorge Dam and Hydroelectric Power Plant located in Communist China.

2. The dam and power plant are located on the Huang-Ho (Yellow River), approximately 20 nm SE of Yun-Cheng at geographic coordinates 34 39N - 111 20E. The complex appeared to be in mid-to-final stages of construction on the most recent photographic coverage (See Figure #4). The dam and power sections appeared to be in late stages of construction, and the coffer dams used in earlier stages have been removed. Large amounts of silt have accumulated in the reservoir behind the dam. Two

respectively), revealed relatively high water with no traces of silt; however, later photography revealed a much lower water level and considerable amounts of silt deposited in the area in front of the penstock intake grates. The deposit of silt could have a direct bearing on the amount of activity related to the power production of this facility. In order to illustrate the information given above and that which follows, three photo-enlargements and a location map have been included as attachments to this memorandum (See Figures 1-4).

3. Answers to the specific requests as given in the above referenced requirements are as follows:

a. Construction Stage of the Dam - Construction of the dam probably started in early 1957 as is indicated by the advanced construction on photography of early 1959 (See Figure #2). The spillway section appeared to be nearing completion and was in use. Cofferdams were diverting river flow from the power generating section, where early stages of construction was getting underway.

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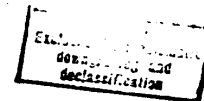
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The dam appeared essentially completed in [] (See Figure #3). The dam extended across the river and a large reservoir was building up behind the dam. In [] (See Figure #4), the dam and power section appeared to be in final stages of construction.

b. Construction Stage of the Power Plant - The external features of the power plant, except for a small section of the roof which was still uncovered, appeared essentially complete on photography [] (See Figure #4). At this time all of the coffer dams and construction-storage and equipment that was located on the river floor was removed. In addition, work on the switching gear, pylons, substation and transmission lines was well underway and final work on the gate housings and gate cranes was nearing completion. The state of completion and the number of units installed within the generator hall could not be definitely determined.

c. Status of Generator and Turbine Installation - Review of all available ground and aerial photography of the turbine and generator section, did not firmly establish the number of installed units. However, based on hypothesis, the turbine sections are probably completed and most of the units are probably in place; and, two or more generators are probably emplaced. The analysis of the dam structure and position of the generator hall with respect to the turbine housing outlets, reveals the position of the generators would be directly over the turbines which will be fed by penstocks built within the dam. The base on which the generator hall is seated, is directly above the turbine housing section. This area appears completed and was photographed on several occasions by visitors from ground vantage points. Although the turbines were not photographed as such, the construction pattern seems to indicate they were installed on or about the time work was underway on the generator hall proper. It is not possible to estimate the total number of generators that were installed or to estimate the degree of operation from the photography attached to this memorandum. Ground photography taken from within the generator hall, showed two generators emplaced. There does not appear to be any external indicators on the aerial photography to prove that these two generators have been installed. At this rate, it is not possible from aerial photography alone, to determine how many of the reported eight generators have been installed. Judging from all outward appearances, the power plant was capable of producing electricity at least on a limited scale. Comparison of this power plant construction was made with other similar plants also under construction in China. From this comparison, a general line of construction can be identified. Upon completion of the turbine-well, construction begins on the generator hall and then it progresses to the installation of generators. This is probably the same procedure employed at the San Men Plant.

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d. Construction Status between [redacted] - This could not be determined from aerial photography alone because there was a dearth of good quality photography over this area during this period. Here again, only a hypothesis can be made. The Chinese had sufficient material and equipment on hand, the likes of which are not found in many parts of China, to allow them to continue with the construction work. There probably is not sufficient photography nor information, available during the six month period to determine precisely, how much their construction work was affected. On top of the many problems undoubtedly facing the Chinese with the construction of this dam on the Yellow River, the silt problem appears to be a major point of consideration (as is indicated in Figure #4).

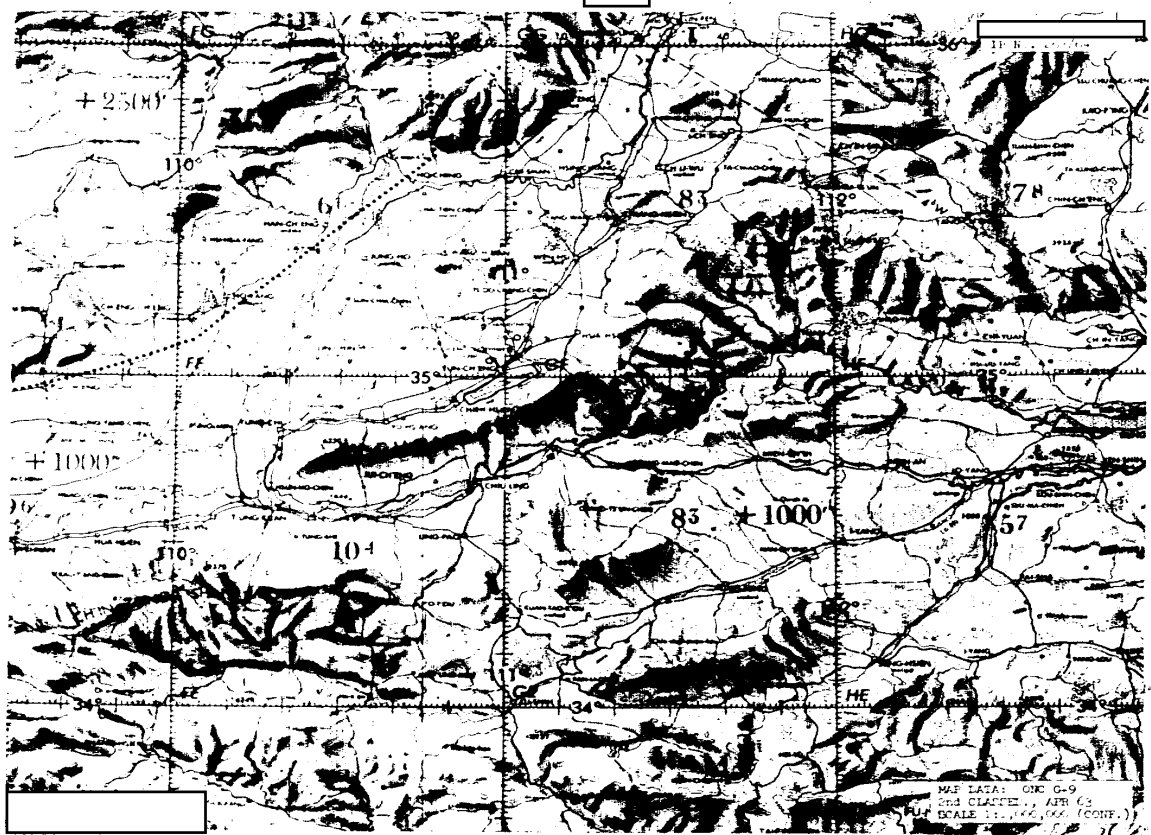
4. The analyst assigned to this requirement was [redacted] who may be contacted on extension [redacted] should any questions arise concerning this memorandum. This memorandum and attachments completes this requirement.

ATTACHMENTS:

- 3 Annotated Photo Enlargements (CIA/PID)
- 1 Annotated Map (CIA/PID/IB-P-937/64)

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